



Department of Defense **DIRECTIVE**

January 4, 1994
NUMBER 5000.59

USD(A)

SUBJECT : DoD Modeling and Simulation (M&S) Management

- References:
- (a) Deputy Secretary of Defense Memorandum, "Modeling and Simulation Management Plan, " June 21, 1991 (hereby canceled)
 - (b) Under Secretary of Defense for Acquisition Memorandum, "Establishment of the Defense Modeling and Simulation Office (DMSO) , " July 22, 1991 (hereby canceled)
 - (c) DoD Directive 5000.1, "Defense Acquisition, " February 23, 1991
 - (d) DoD Instruction 5000.2, "Defense Acquisition Management Policies and Procedures, " February 23, 1991
 - (e) through (1) , see enclosure 1

A. **PURPOSE**

This Directive:

1. Supersedes references (a) and (b) .
2. Establishes DoD policy, assigns responsibilities, and prescribes procedures for the management of M&S.
3. Establishes the DoD Executive Council for Modeling and Simulations (EXCIMS) .
4. Establishes the Defense Modeling and Simulation Office (DMSO) .

B. **APPLICABILITY AND SCOPE**

This Directive applies to:

1. The Office of the Secretary of Defense (OSD) , the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Inspector General of the Department of Defense, the Defense Agencies, and the DoD Field Activities (hereafter referred to collectively as "the DoD Components") .
2. All DoD M&S applications used after the effective date of this Directive.

C. DEFINITIONS

Terms used in this Directive are defined in enclosure 2.

D. POLICY

It is DoD policy that:

1. A management and administrative structure for improving the oversight, coordination, and communication of DoD M&S issues shall be established.

2. A coordinated DoD M&S Master Plan shall be developed.

3. A coordinated DoD M&S Investment Plan shall be developed.

4. Investments shall promote the enhancements of DoD M&S technologies in support of operational needs and the acquisition **process**; develop common tools, methodologies, and databases; and establish standards and protocols promoting the internetting, data exchange, open system architecture, and software reusability of M&S applications. Those standards shall be consistent with current national, Federal, DoD-wide and, where practicable, international standards for open systems.

5. A M&S Information Analysis Center shall be established.

6. **Common-** and general-use M&S applications (such as terrain, environmental, or common manufacturing process representations) shall be assigned to a specific DoD Component for management **responsibility**. The DoD Component with that responsibility shall be designated the "DoD M&S Executive Agent" for that application. The Executive Agent shall provide the application to the other DoD Components or will make provision for supporting Component acquisition program milestones requiring the application. Designated M&S Executive Agents shall be responsive to the direction of the Under Secretary of Defense for Acquisition (**USD(A)**) in the execution of this responsibility.

7. The DoD Components shall establish verification, validation, and accreditation (WA) policies and procedures for M&S applications managed by the DoD Component. The "DoD M&S Executive Agent" shall establish WA procedures for that application.

8. M&S applications used to support the major DoD **decisionmaking** organizations and processes (such as the Defense Planning and Resources Board; the Defense Acquisition Board; the Joint Requirements Oversight Council; and the DoD Planning, Programing, and Budgeting system (references (c) through (g))) shall be accredited for that use by the DoD Component for its own forces and capabilities.

9. The DoD Components shall implement a M&S management system for oversight of their own M&S activities, and for coordinating and communicating DoD M&S issues.

10. Each DoD Component shall be the final authority for validating and accrediting representations of its own forces and capabilities in joint and common use M&S. Each Component shall be responsive to the other Components to ensure that its forces and capabilities are appropriately represented in the development of joint and common use M&S.

11. Data and data administration for DoD M&S applications shall conform to the policies and procedures for data administration specified in DoD Directive 8320.1 (reference (h)) .

12. Data, information, and information technologies used in support of M&S are corporate assets and shall adhere to the information management policies contained in DoD Directive 8000.1 (reference (i)) and DoD Directive 7920.1 (reference (j)).

E. RESPONSIBILITIES

1. The Under Secretary of Defense for Acquisition shall:

a. Strengthen the uses of M&S in the Department of Defense.

b. Issue plans, programs, policies, and procedures for DoD M&S in coordination with the DoD Components.

c. Develop DoD publications for the management and advancement of M&S, in coordination with the DoD Components.

d. Establish an **EXCIMS** to:

(1) Advise and assist the **USD(A)** in strengthening the uses of M&S in the Department of Defense.

(2) Oversee development of DoD M&S plans, programs, policies, procedures, and DoD Directives and publications.

(3) Encourage improved communication and coordination among DoD M&S activities.

(4) Identify investments in M&S applications that have high-value return in fulfilling DoD requirements, or that **fill gaps** in DoD M&S capabilities.

(5) Promote joint and cooperative research, development, acquisition, and operation of M&S systems, technologies, and capabilities among the DoD Components.

(6) Recommend DoD M&S goals and objectives, and an investment strategy and plan to achieve them.

(7) Recommend a DoD Component be designated as a "DoD M&S Executive Agent," as needed.

(8) Foster programs to develop and, where applicable, implement DoD M&S interoperability standards and protocols.

e. Establish a **DMSO**.

f. Publish a DoD M&S Master Plan and an Investment Plan, and coordinate those plans with the DoD Components.

g. Designate a DoD Component as a "DoD M&S Executive Agent" for a **common-** or general-use M&S application, as needed.

h. Establish DoD-wide M&S goals and objectives, and an investment strategy to achieve them.

i. Establish a DoD M&S Information Analysis Center.

j. Ensure that the Director, Defense Research and Engineering shall:

(1) Assist the **USD(A)** in strengthening the uses of M&S in the Department of Defense.

(2) Chair the **EXCIMS** and ensure that it meets at least twice each calendar year.

(3) Provide EXCIMS-developed recommendations and advice to the **USD(A)**.

(4) Through the Director, **DMSO**:

(a) Encourage improved communication and coordination among DoD M&S activities.

(b) Function as the DoD focal point for M&S, and ensure that M&S technology development is consistent with other related initiatives.

(c) Serve as the **EXCIMS** Secretary and provide support for the **EXCIMS** during and between meetings.

(d) AS **EXCIMS** Secretary:

1 Prepare the **EXCIMS** meeting agenda.

2 Coordinate briefings for presentation to the **EXCIMS**.

3 Distribute read-ahead materials to principal participants before each EXCIMS meeting.

4 Maintain a record of each EXCIMS meeting.

5 Establish an action management and tracking system for M&S action items requiring USD(A) approval.

(e) Chair the DoD Modeling and Simulation Working Group (MSWG), and monitor the activities of M&S-related joint, functional, Sub Working Groups (SWGs), and Task Forces (TFs) .

(f) Staff and distribute DoD M&S plans, programs, policies, procedures, and DoD publications.

2. The OSD Principal Staff Assistants shall:

a. Represent their interests to the USD(A), the EXCIMS, and the DMSO, as appropriate, on all pertinent matters about M&S.

b. Provide representatives to the EXCIMS, the MSWG, the SWGS, and TFs, as requested by the USD(A) .

c. Plan and provide resources, as needed, to carry out functional M&S responsibilities according to Principal Staff Assistant priorities.

d. Review, coordinate, and approve DoD M&S plans, programs, policies, procedures, and DoD publications.

e. Designate an office to serve as their single point-of-contact on all M&S matters, and for coordination with the EXCIMS and the DMSO.

f. Provide information about M&S applications, standards, and data bases managed by the Principal Staff Assistant to the DoD M&S Information Analysis Center.

g. Assume DoD-wide responsibility for managing a DoD common- or general-use M&S application, including relevant standards and data bases, in response to guidance from the USD(A) , when designated as a "DoD M&S Executive Agent."

3. The Heads of the DoD Components shall:

a. Represent their interests to the USD(A), the EXCIMS, and DMSO, as appropriate, on all pertinent matters about M&S.

b. Provide representatives to the EXCIMS, the MSWG, the SWGS, and TFs, as requested by the USD(A) .

c. Plan and provide resources, as needed, to **carry** out functional M&S responsibilities according to DoD Component priorities.

d. Review, coordinate, and approve DoD M&S plans, programs, policies, procedures, and DoD publications.

e. Designate an office to serve as their single **point-of-contact** on **all** M&S matters, and for coordination with the EXCIMS and the **DMSO**.

f. Implement a M&S management system for oversight of their own M&S activities, and for internal coordination and communication of DoD M&S issues.

g. Provide information on M&S applications, standards, and data bases managed by the DoD Component to the DoD M&S Information Analysis Center.

h. Publish a DoD Component M&S Master and Investment Plan.

i. Ensure that each M&S application, standard, and data base **used in** the DoD Component has a proponent designated to be responsible for its configuration and life-cycle management.

j. Establish procedures to explore opportunities for joint or cooperative M&S development with the other DoD Components before starting development of a M&S system.

k. Establish **VVA** policies, procedures, and guidelines for M&S applications, standards, and data bases managed by the DoD Component.

1. Ensure that M&S applications, standards, and data bases are both efficient and effective. The contributions made by the use of particular M&S applications, standards, and data bases during developmental and operational testing shall be documented.

m. Assume DoD-wide responsibility for managing a DoD **common-** or general-use M&S application, in response to guidance from the **USD(A)**, when designated as a "DoD M&S Executive Agent."

4. The **Chairman of the Joint Chiefs of Staff** shall:

a. Represent the interests of, and integrate the requirements of, the Combatant Commands for joint **M&S (JM&S)**.

b. Establish the processes to satisfy the needs of the Combatant Commands and other DoD Components under the purview of the Chairman of the Joint Chiefs of Staff for M&S capabilities.

c. Provide liaison for the Combatant Commands with the other DoD Components for **JM&S** matters.

d. Promote the use of joint doctrine and tactics, techniques, and procedures in **JM&S**.

e. Promote the benefits of interoperable **JM&S** architectures to the Combatant Commands and the Services.

F. **PROCEDURES**

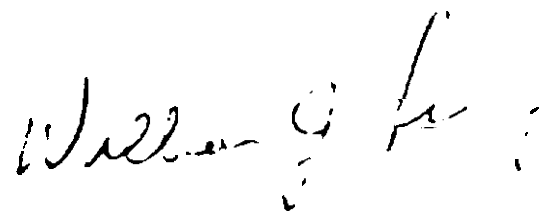
The **USD(A)** shall develop, coordinate, and issue DoD publications, as needed and authorized, to assist DoD Components in managing M&S in the Department of Defense.

G. **INFORMATION REQUIREMENTS**

The **USD(A)** may establish information reporting requirements, in accordance with DoD Directive 8910.1 (reference (k)) to assist in the management of DoD M&S activities. When possible, existing information systems shall be used or modified rather than creating new systems. The reporting requirement in paragraph E.4.f. is exempt from licensing in accordance with paragraph E.4.b. of DoD 8910.1-M (reference (l)).

H. **EFFECTIVE DATE AND IMPLEMENTATION**

This Directive is effective immediately. Forward one copy of implementing documents to the Under Secretary of Defense for Acquisition within 120 days.



WILLIAM J. PERRY
Deputy Secretary of Defense

Enclosures - 2

1. References
2. Definitions

REFERENCES, continued

- (e) DoD 5000.2-M, "Defense Acquisition Management Documentation and Reports," February 1991, authorized by DoD Instruction 5000.2, February 23, 1991
- (f) DoD Directive 7045.14, "The Planning, Programing, and Budgeting System (**PPBS**), " May 22, 1984
- (g) Memorandum for the Chairman (**MCM**) 76-92, "Charter of the Joint Requirements Oversight Council"
- (h) DoD Directive 8320.1, "DoD Data Administration, " September 26, 1991
- (i) DoD Directive 8000.1, "Defense Information Management (**IM**) Program, " **October** 27, 1992
- (j) DoD Directive 7920.1, "Life-Cycle Management of Automated Information Systems (**AISS**)," June 20, 1988, supplemented by **ASD(C3I)** Memorandum, "Interim Policy for Automated Information Systems, " **April** 9, 1992
- (k) DoD Directive 8910.1, "Management and Control of Information Requirements," June **11**, 1993
- (l) DoD 8910.1-M, "DoD Procedures for Management of Information Requirements , " November 1986, authorized by DoD Directive 8910.1, June 11, 1993

DEFINITIONS

1. Accreditation. The official certification that a model or simulation is acceptable for use for a specific purpose.
2. Common-use M&S. M&S applications, services, or materials provided by a DoD Component to two or more DoD Components.
3. Cooperative Development. A project in which two or more DoD Components share in domain research, technical studies, or technology development but that may result in dissimilar M&S applications.
4. DoD Modeling and Simulation (M&S) Executive Agent. A DoD Component to whom the USD(A) has assigned responsibility and delegated authority for the development and maintenance of a specific area of M&S application, including relevant standards and data bases, used by or common to many models and simulations.
5. Executive Council for Modeling and Simulations (EXCIMS). An organization established by the USD(A) and responsible for providing advice and assistance on DoD M&S issues. Membership is determined by the USD(A) and is at the Senior Executive Service, flag, and general officer level.
6. General -use M&S Applications. Specific representations of the physical environment or environmental effects used by, or common to, many models and simulations; e.g. terrain, atmospheric, or hydrographic effects.
7. Joint M&S. Abstract representations of joint and Service forces, capabilities, equipment, materiel, and services used in the joint environment or by two, or more, Military Services.
8. Military Departments. The Department of the Army, the Department of the Navy, and the Department of the Air Force, including their National Guard and Reserve components.
9. Military Services. The Army, the Navy, the Air Force, and the Marine Corps. (See definition 8., above.)
10. Model. A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process.
11. Modeling and Simulation (M&S) Interoperability. The ability of a model or simulation to provide services to, and accept services from, other models and simulations, and to use the services so exchanged to enable them to operate effectively together.
12. Modeling and Simulation (M&S) Investment Plan. A DoD plan, published under the authority of the USD(A) and with the coordination of the DoD Components, that establishes short-term (present to 6 years) and long-term (beyond 6 years) programs and funding for

joint and common use M&S to achieve the specified goals and objectives outlined in the DoD M&S Master Plan.

13. **Modeling and Simulation (M&S) Master Plan.** A DoD plan, published under the authority of the **USD(A)** and with the coordination of the DoD Components, that establishes short-term (present to 6 years) and long-term (beyond 6 years) DoD goals and objectives for the application of M&S for joint and common use within the Department of Defense. It shall also include an assessment of current **M&S** capabilities, a status report on M&S efforts under development, and a road map that delineates the management, investment, and technical strategies required to achieve DoD M&S objectives.

14. **Office of the Secretary of Defense (OSD).** Includes the immediate Offices of the Secretary and Deputy Secretary of Defense, the Under Secretaries of Defense, the Comptroller of the Department of Defense (C, DoD), the Director of Defense Research and Engineering, the Assistant Secretaries of Defense (**ASDs**), the General Counsel of the Department of Defense (GC, DoD), the Assistants to the Secretary of Defense (**ATSDs**), the OSD Directors, or equivalents, who report directly to the Secretary or the Deputy Secretary of Defense, and such other staff offices as the Secretary of Defense establishes to assist in carrying out assigned responsibilities.

15. **Principal Staff Assistants.** The Under Secretaries of Defense; the C, DoD; the **ASDs**; the Inspector General of the Department of Defense; the GC, DoD; the **ATSDs**; and the OSD Directors, or equivalents, who report directly to the Secretary or Deputy Secretary of Defense. (See definition 14., above.)

16. **Simulation.** A method for implementing a model over time. Also, a technique for testing, analysis, or training in which **real-world** systems are used, or where real-world and conceptual systems are reproduced by a model.

17. **Validation.** The process of determining the degree to which a model is an accurate representation of the real-world from the perspective of the intended uses of the model.

18. **Verification.** The process of determining that a model implementation accurately represents the developer's conceptual description and specifications.